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BOOK REVIEWS

Fleas. Proceedings of the International Conference on Fleas, Ashton Wold, Peterborough, U.K., 21–25 June 1977. R. Traub and H. Starcke, eds. A. A. Balkema, Rotterdam. 1980. 420 pp. $49.50.

This book is unique in several aspects. Beautifully published, with 150 black and white illustrations, it represents the first multiauthor treatise on fleas (Siphanoptera), one of the most important groups of vectors of human and animal disease agents. The list of contributors reads like who is who in flea research, and even like who *was* who because it starts, properly, with a very interesting and personal chapter devoted to Nathaniel Charles Rothschild (1877–1923), the foremost conservationist, collector of fleas and author of 150 scientific publications (more than 100 dealing with fleas), who did his scientific work "in his spare time" while working for the Rothschild banking house. His famous daughter, the world's renowned authority on fleas, Dr. Miriam Louisa Rothschild, herself the author of more than 250 scientific papers, together with her son, Dr. Charles Lane, hosted the 80 participants of the international conference at Ashton Wold.

The first two chapters (pp. 13–172), by Prof. Traub, deal with new genera of Siphonaptera and with adaptive modifications in fleas. The excellent illustrations, prepared by the author, are very well reproduced in these chapters, documenting the convergent evolution and flea taxonomy. Following chapters, of various lengths, reflect the extensive experience of the authors and the high level of excellence in the area of flea research. R. L. C. Pilgrim describes fleas of New Zealand. The New World host associations of *Pulex* are dealt with by Cluff E. Hoppla. James R. Busvine illustrates his chapter on the four Fs (fleas, fables, folklore and fantasies) with drawings of diverse flea traps that I found most interesting and amusing. The control of flea vectors of plague is described by Norman G. Gratz. Ecological interrelationships among fleas are covered by D. C. Cavanaugh and J. E. Williams. Harry Hoogstral describes flea vectors of rickettsiae and trypanosomes. Flea studies in the U.S.S.R. are reviewed by V. A. Bibikova and I. F. Zhovtyi, and a link between epizootics of sylvatic plague in California and caves in the Lava Beds National Monument are outlined by B. C. Nelson and C. R. Smith. Excellent electron micrographs of rickettsiae in the flea mitdgut are provided by S. Ito and J. W. Vinson. The role of flea vectors in murine typhus, tularemia, and myxomatosis are the subjects of shorter reports. J. Goose describes chemical control of fleas and Rachel Galun the specificity and biological significance of the feeding response. The last 16 contributions, two in French, deal with flea physiology, morphology, behavior and taxonomy. The presentation of each facet of a chapter is clear,

lucid, and to the point. Those desiring detailed information on fleas will find for the first time in a single volume a complete up-to-date survey of the subject.

This book will appeal to a very wide audience. I recommend it highly for use in entomology departments and in medical schools.

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An Atlas of the Fleas of the Eastern United States. Allen H. Benton. Marginal Media, Fredonia, N.Y. 1980. 177 pp. 63 maps. Looseleaf, Soft Cover. $6.50.

The book was designed to facilitate the study of the geographic distribution of the fleas of the eastern United States by permitting the qualified reader to spot the known records and to readily add and map new data as they appear.

There are a few introductory pages on the 'natural history and ecology' of fleas and an outline of the history of Siphonapteran studies for the area. A checklist of the fleas of the eastern U.S. is presented ahead of the atlas of 63 pages of maps, on which dots are used to indicate the known records, arranged by county. A set of larger maps near the front of the book shows the counties for the states encompassed. A glance at the maps suffices to grasp the known information on any of the species regarding its distribution within the region in question. For each species listed, the author also provides a summary of available information on hosts, seasonal abundance, and medical importance. One or two references are cited in each case as sources for additional data. Pertinent state and regional references and some general ones, are cited at the end of the book, preceding an appendix on the distribution of the fleas of Minnesota. This book does not purport to be a guide for the identification of fleas, nor is it a taxonomic work in any sense of the term. Not even the original descriptions are cited.

The author worked diligently and accurately in checking references and in tracking down and verifying certain critical specimens. None of the species known to occur in the territory seem to have been omitted, and the scientific names used agree with the standard literature. The comments on bionomics and seasonal variations for the various species will be appreciated by all who have had to comb scattered references seeking such meaningful information. The appendix has valuable ecological notes on Minnesota.

The manner in which the book is organized presents problems for the reader. The list of species included in the atlas (pp. 24–26) is arranged by family and subfamily, but there is no indication of the pages where the